

Space Weather Forecast

Issued on Tuesday, 20 August 2024 at 01:10 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Likelihood of Minor/Moderate radio blackouts (R1/R2) falling slightly later in UTC week, as risk of G1 Minor geomagnetic storms perhaps rises.

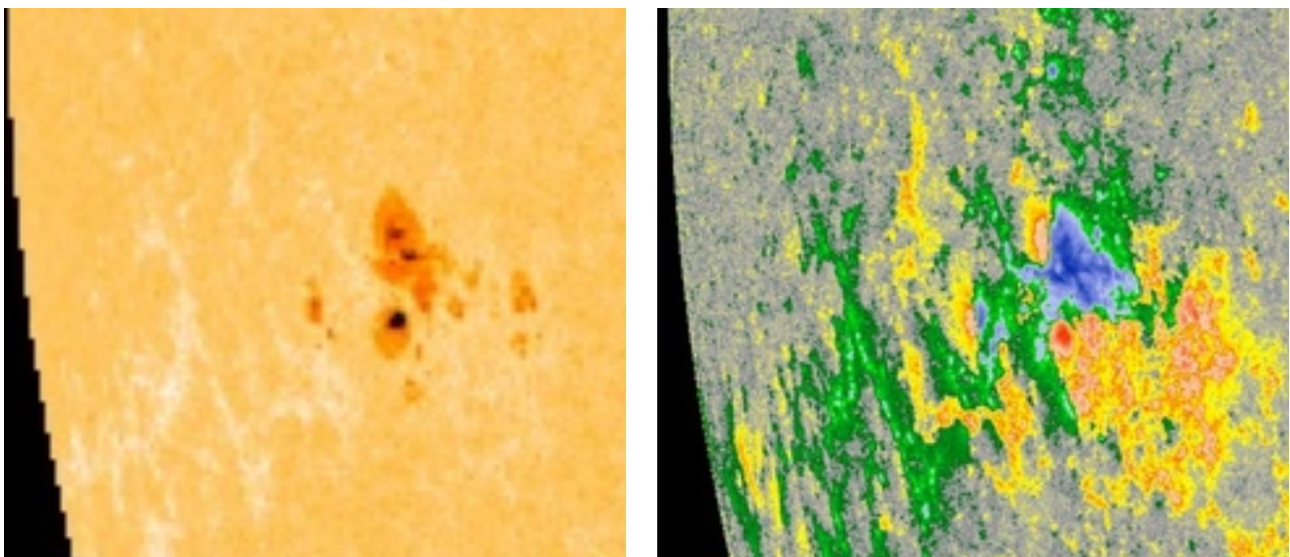
Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was Moderate, with four Moderate-class flares observed, peaking with a doublet from a sunspot region in the far east starting at 19/2152UTC. This spot group had earlier produced a smaller flare greeting the UTC day at 19/0000UTC, and a second region in the southwest produced a fourth event at 19/0936UTC.

Almost all of the magnetically bipolar regions on the facing side of the Sun showed some form of growth in the period, with this consisting of proliferation of spots and spreading in all but one group in the northeast, which shrank. The most complex regions are now perhaps in the southeast, although the western solar hemisphere retains its complex group but this is less congested than in recent days, with developments mainly concentrated in outlying minor spots.

Satellite imagery for the period showed a number of minor outlying Coronal Mass Ejections (CMEs), however none was confirmed as Earth-directed.

Figure 1: Visible and false colour magnetic imagery from 19/2330UTC showing the most active sunspot region of the period in the southeast quadrant.



Solar Wind / Geomagnetic Activity: The solar wind showed a slow regime. The solar wind speed was mainly confined to background levels, but became slightly elevated around 19/0600UTC. The number of particles in the solar wind was at background levels throughout. The associated
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magnetic field was slightly elevated at first, but reduced slightly with time. The north-south component was mainly co-aligned with Earth's field during the UTC morning, but became increasingly anti-aligned later in the period.

The net result of the above solar wind measures was provisionally mostly quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate-class flares are expected until after UTC midweek, whereupon the departure of two complex regions in turn should see a slight dip in daily risks. Strong-class flares are rated a decreasing Slight Chance over the same timeframe. No significant arrivals are expected.

Solar Wind /Geomagnetic Activity: There are no definitively Earth-directed CMEs, however a high solar latitude CME on 17 August has a slight chance of giving a glancing arrival on day 2 (Wednesday 21 August). This may coincide with the only fast wind due in the four days into Thursday 22 August, however confidence is low.

Quiet geomagnetic activity should characterise the first half of the UTC week, with an increasing slight chance of G1 Minor geomagnetic storms to end it, with this increase of low confidence.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, however there is a slight chance of breaching the S1 Minor solar radiation storm level should any notable flares occur.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	5	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	80	80	75	70
Very Active	R3 to R5 X	No	20	20	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	20	20	15	15
Very Active	≥ S3 *	No	5	5	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)